



NOAA Teacher at Sea
Elsa Stuber
Onboard NOAA Ship McARTHUR II
June 4 – 9, 2007

NOAA Teacher at Sea: Elsa Stuber

NOAA Ship MCARTHUR II Cruise S307

Mission: Collecting Time Series of physical, chemical and biological data to document spatial and temporal pattern in the California Current System

DAY 3 Tuesday June 5, 2007 at sea

Visibility: Clear

Wind direction 275.64

Wind speed: 13 knots

Air temperature: 16.1 C

Sea wave Height: 1-2 feet

Seawater temperature: 13.98 C

Swell wave: 4-6 feet

Sea level pressure: 1017.4

Cloud cover: 50%, stratus

Science and Technology Log

Up at 06:00 and went to flying bridge to observe with Kathryn. Not much wildlife to see other than a few sea gulls. Color of water so blue. Temperature is cool early in the morning. Breakfast good fruit, lots of starches, sausages. A time to talk to crewmembers about the different trips of MCARTHUR II from Alaska to Peru. Jim spoke in detail @ working as a fisherman in Alaska, ice in his moustache, not needing very heavy clothes because you worked so hard you got hot. He said it was 06:00 until 22:00 in summer time. He spoke about fishing limit rules, coordinating with Japanese fishing boats, and also how the catch numbers have fallen since ten or fifteen years ago.

Cast 6 and 7 were early in the morning with other cruise staff. All proceeded as expected.

Cast 8 @ 08:18 Station 60-75 Latitude 37.067N Longitude 124.4145 W Cast depth to 1000m; CTD cylinders tripped at 1000, 200, 150, 100, 80, 60, 40, 30, 20, 10, 5, 0 meters Data for cast is Table 5 at end of report. Cast information time is always written in Greenwich time; I subtract seven hours to show our time on ship for the station work. The Cast information listing for latitude and longitude is close but not exact to Table 1 for the CalCOFI stations. In the 1000 meter depth casts it takes about forty minutes for the CTD to go down to depth and come up again, stopping at the different levels for the specific rosette to open.

I learned more information on the testing of samples from Marguerite Blum, MBARI oceanographer:

The nutrient samples contain nitrates and nitrites as well as silicates, phosphates. The nitrates and nitrites area examined at Moss Landing lab with an auto flow analyzer, which translates sample into voltage and indicates the amount of the nutrient in the sample.

QP (quantitative phytoplankton) will show up to fifteen general types of phytoplankton in a sample. This is an expensive test to run. The flow cytometry test divides the sample into four groups: bacteria, prokaryotes, eukarotyes, and zooplankton. It will determine a general number of how many of each are present in the sample.

The Carbon 14 test shows the amount of carbon uptake by the phytoplankton. C14 of specimen fluoresces and radioactive emission level counted on a scintillation counter. The chlorophyll analysis of the green chlorophyll is run on the flurometer. Samples that have been in the freezer 24 hours we will process in the dry lab while on this cruise. On this cast I also handled the A* filter, the HPLC filter and the POC filter, placing them in their red, blue, and green cryovials respectively, and then put in the liquid nitrogen container. The analysis of HPLC, POC, FCM and N15 samples are not done at Moss Landing but are sent out to other labs for processing.

Cast 9 @ 11:45 Station 60-80 Latitude 36.5677N Longitude 125.0327 W Cast depth to 1000m; CTD cylinders tripped at 1000, 200, 150, 100, 80, 60, 40, 30, 20, 10, 5, 0 meters; Data for cast is Table 6 at end of report.

There have been bongo net tows at our stations, but often when I am working or sleeping. I have seen some of specimens caught which are in jars with formalin. I hope to see a net tow start to finish soon.

I have watched with Kathryn, the Mammal observer, during different periods today and have not seen any wildlife. She saw seven dolphins earlier in the day. I asked her about the tagging of sea life and she talked about the guidelines. She said the organization had to apply for a permit to the National Marine Fisheries. This may take up to a year to obtain. A boat doing tagging must display a special flag with a research number on it. The permit will specify the number of "takes" (getting close to or affecting the animal such as a whale or turtle). She said a lot of information was available on line at TOPP (Tagging of Pacific Pelagics). When it's on the surface, the signal from the tagged animal will beam up to satellite and transmit its location. How long it will function depends on the battery life, and of course a small animal can only carry a small battery. The scientist will set the frequency of the beam according to the frequency of the animal at the surface. A sea lion surfaces every fifteen minutes so its battery will last three weeks. A turtle will surface every second day so its battery will last six months to a year or more. Scientists want to recapture radio equipment so watch closely at the animal's location. The equipment will give off a signal for at least a week after it falls off. Researchers put gummy worms under the suction cups on whales and know it will take about a week for that sugar to be dissolved, and then the apparatus will fall off. Tic Tacs with suction cups

also work.. The equipment is numbered for location and will be returned if found by any ships, any countries at sea. She said a problem that can occur is that is that the sensor on the collar could get algae grown over it so it stays off.

Cast 10 and 11 were with other cruise staff.

Cast 12 was started @ 22:45 and was to be a deep cast, 4500m. When it reached @1100m transmission of data stopped. The CTD was brought back to the surface and worked on by staff about three hours. A kink had developed in the wire. That section was cut out and all connections redone.

Data retrieved gives information for the 1100 m at this location for beam transmission, salinity, temperature, and fluorescence all taken by the computer monitoring system in the dry lab. Bottle samples were not taken.

To bed @ 02:00 June 6th I am greatly stewing about the CTD problems with all it means to the research, to the cruise, and the expense of it all.